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UNITED STATES DISTRICT COURT
FOR THE CENTRAL DISTRICT OF CALIFORNIA

ENTROPIC COMMUNICATIONS, LLC, Plaintiff, v. COX COMMUNICATIONS, INC.; COXCOM, LLC; and COX COMMUNICATIONS CALIFORNIA, LLC, Defendants.	Lead Case No. 2:23-cv-01049-JWH-KES Related Case No. 2:23-cv-01050-JWH-KES **DEFENDANTS' JOINT RESPONSIVE CLAIM CONSTRUCTION BRIEF** Date: July 16, 2024 Time: 10:00 a.m. Dept: 9D Judge: Hon. John W. Holcomb
ENTROPIC COMMUNICATIONS, LLC, Plaintiff, v. COMCAST CORPORATION; COMCAST CABLE COMMUNICATIONS, LLC; and COMCAST CABLE COMMUNICATIONS MANAGEMENT, LLC, Defendants.	

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I. INTRODUCTION

The parties dispute the meaning of four terms from three patents: the '775, '690, and '682 Patents.[1] The Court should construe three of those terms—"content payload" from the '690 Patent, and "CMTS" and "SNR-related metric" from the '682 Patent—because the terms' scope is disputed or requires clarification for the jury. The Court should not construe the limitation Entropic proposes from the '775 Patent because Entropic's proposed construction addresses an issue not in dispute in this case and otherwise creates confusion.

II. OVERVIEW OF THE PATENTS

The '775, '690, and '682 Patents relate to cable networking. In a cable system, a hybrid-fiber coaxial (HFC) network connects cable modems located at customer premises to a cable "headend." The network may provide both cable-television signals and data services. The headend contains equipment that sends data to, and receives it from, customers' cable modems.

The '775 Patent describes a cable modem configured to partition data networking operations, in a component called the data networking engine, from cable modem operations, in a component called the cable modem engine. '775 Patent at 2:24-27. The patent explains the disclosed modem includes data-

[1] This brief uses the following abbreviations: Plaintiff Entropic Communications, LLC ("Entropic" or "Plaintiff"); Defendants Comcast Corporation, Comcast Cable Communications, LLC, and Comcast Cable Communications Management ("Comcast"), Defendants Cox Communications, Inc., Coxcom, LLC, and Cox Communications California LLC ("Cox") (collectively, "Defendants"); U.S. Patent Nos. 8,223,775 (the "'775 Patent"), 8,284,690 (the "'690 Patent"), 10,135,682 (the "'682 Patent"); Exhibits to the Declaration of Kathryn Bi, filed concurrently; ("Bi Decl., Ex."); Exhibits to the Declaration of Krishnan Padmanabhan, filed concurrently ("Padmanabhan Decl., Ex."); Exhibits to the Declaration of Dr. Sandeep Chatterjee, dated April 19, 2024 ("Chatterjee Decl., Ex."); Exhibits to the Declaration of John Holobinko, dated April 19, 2024 (Dkt. 325-10 through 325-18) ("Holobinko Apr. 19, 2024 Decl., Ex."); Exhibits to the Declaration of John Holobinko, dated April 29, 2024 (Dkt. 325-19 through 325-22) ("Holobinko Apr. 29, 2024 Decl., Ex."); Entropic's Opening Claim Construction Brief (Dkt. 325) ("Pl. Br."); and *Entropic Commc'ns, LLC v. Charter Commc'ns, Inc.*, No. 2:22-cv-00125 (E.D. Tex.) ("Charter Case").

networking functions beyond those of traditional cable modems. *Id*. at 1:13-29. The claims require the modem to completely partition data-networking functions from cable-modem functions. *Id*. at 4:13-19. "This is accomplished by localizing data networking functions in the data networking engine processor and localizing cable modem functions in the cable modem engine processor." *Id*.

The '690 Patent is directed to a "receiver determined probe" that can be used to "characterize the communication channel over which data is to be sent between nodes [i.e., devices] [in a] network." '690 Patent at 1:41-43, 2:3-6. The receiving node creates a probe request that "specifies a plurality of parameters associated with the generation and transmission of the probe, including the content of a payload of the probe." *Id*. at 2:6-9. The transmitting node then "generates a probe having the form specified by these parameters." *Id.* at 2:3-6, 2:17-19. "By comparing the reference probe with the actual received probe, the receiver can determine some of the characteristics of the channel between the transmitting and receiving node." *Id*. at 1:54-57.

The '682 Patent is directed to methods and systems for assigning cable modems (CMs) to service groups and communicating with each group. '682 Patent, claim 1. Each of the cable modems connects to a cable-modem termination system (CMTS) through the HFC network. *Id*. at 3:47-50. The CMTS assigns cable modems to service groups based on a signal-to-noise (SNR) related metric. *Id*., claim 1. The CMTS then communicates with each of the modems in the service group using at least one common communication parameter. *Id*.

III. LEGAL STANDARD

Claim construction is an issue of law for the court to decide. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 390-91 (1996). Claim terms are presumed to have their ordinary and customary meaning when read in the context of the intrinsic record, including the specification and prosecution history. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313, 1315 (Fed. Cir. 2005). When the specification

"reveal[s] a special definition given to a claim term by the patentee that differs from the meaning it would otherwise possess," the "inventor's lexicography governs." *Id*. at 1316. Extrinsic evidence, which "consists of all evidence external to the patent and prosecution history . . . can shed useful light on the relevant art . . . [but is] less significant than the intrinsic record in determining the legally operative meaning of claim language." *Id*. at 1317 (internal quotations omitted). For example, technical dictionaries can be useful to show how a person of "skill in the art might use the claim terms." *Id*. at 1318. Likewise, expert testimony can be useful where it is well supported and consistent with the intrinsic record. *Id*.

Under 35 U.S.C. § 112, "a patent must be precise enough to afford clear notice of what is claimed, thereby 'appris[ing] the public of what is still open to them.'" *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 909 (2014) (quoting *Markman*, 517 U.S. at 373). A claim term is indefinite when, considering the intrinsic record, it fails to "inform those skilled in the art about the scope of the invention with reasonable certainty." *Id*. at 910. A claim term's indefiniteness renders the claim invalid. *Id*. at 901.

IV. DISPUTED TERMS

A. "wherein the cable modem functions performed by the cable modem engine are completely partitioned from the home networking functions performed by the data networking engine" ('775 Patent, claim 18)

Defendants' Proposed Construction	Plaintiff's Proposed Construction
Ordinary and customary meaning	"wherein the cable modem engine and the data networking engine are not necessarily physically separate but are functionally separate such that the cable modem functions are performed only by the cable modem engine and the home networking functions are performed only by the data networking engine"

Any construction that adds 21 words to what it purports to construe is suspect. Here, Entropic proposes a construction drafted to address an argument that

Defendants are not advancing and that otherwise adds nothing to the claim language but confusion. The claim limitation uses readily understandable words that already establish that the cable modem engine and data networking engine are functionally separate. Defendants do not contend that those engines cannot communicate with each other, which is the position the court in the Eastern District of Texas addressed. There are, however, numerous other requirements for both engines recited in the claim, and Entropic's proposed construction risks rewriting or confusing those limitations. Because the claim language is clear on its own and the parties do not present the dispute the proposed construction was intended to address, the Court should not construe this claim term. *Phillips*, 415 F.3d at 1312; *O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008).

Claim 18 recites a system comprising a data networking engine, a cable modem engine, and a data bus connecting the two. It states that the data networking engine is "implemented in a first circuit" that includes "at least one processor" and performs "home networking functions." '775 Patent, claim 18. The cable modem engine is "implemented in a second circuit" that is "separate from the first circuit" and that also includes at least one processor. *Id*. The cable modem engine performs "cable modem functions other than the home networking functions." *Id*. The data bus connects the data networking engine to the cable modem engine. *Id*. The claim limitation in dispute then confirms that "the cable modem functions performed by the cable modem engine are completely partitioned from the home networking functions performed by the data networking engine." *Id*. This limitation reflects the specification's teaching that "the data networking and cable modem functions are decoupled and implemented in ***different*** processors . . ." *See* '775 Patent at 4:25-28 (emphasis added).

Entropic takes its proposed construction from the Eastern District of Texas's *Markman* order in the Charter Case. Pl. Br. at 9. However, that order addressed an

issue of claim scope that the parties do not dispute here. Indeed, in the Charter Case, ***Entropic*** proposed (as Defendants do now) that this term be given its plain and ordinary meaning. The Eastern District of Texas construed the claim only to "expressly reject" ***Charter's*** contention that the claimed "cable modem engine and the data networking engine cannot share any connecting circuitry, data paths, or memory devices." *See Entropic Commc'ns, LLC v. Charter Commc'ns, Inc.*, 2023 WL 4181266, at *10 (E.D. Tex. June 26, 2023). Defendants in this case do not make such a contention and the claim itself establishes that a data bus connects the data networking engine to the cable modem engine such that a construction that seeks to make that point is unnecessary.

More than just unnecessary, however, Entropic's proposed construction is affirmatively improper because the dispute it was intended to address is not presented and the construction would confuse the jury about the proper scope of the claim. *See Power-One, Inc. v. Artesyn Techs., Inc.*, 599 F.3d 1343, 1348 (Fed. Cir. 2010) (a court's constructions "must ensure that the jury fully understands . . . what the patentee covered by the claims") (internal quotation omitted). For example, Claim 18 states that the cable modem and data networking engines must be physically separate in the sense that each must be implemented in a separate circuit that includes at least one processor. '775 Patent, claim 18. A construction describing the two engines as "not necessarily physically separate" muddles those claim requirements such that the jury might misunderstand that the recited engines can share a single physical circuit or processor.

While Entropic criticizes Defendants' refusal to agree that the cable-modem and data-networking engines need "only to be 'functionally separate,'" Pl. Br. at 9, the claim requires more than that, including that the two be implemented in "separate" circuits that each include a processor, *see* '775 Patent, claim 18. Entropic should not be permitted to rewrite the claim to suggest otherwise.

Similarly, Entropic's argument ignores part of the specification that it cites as support:

> Functional Partitioning. Cable modem 100 completely partitions data networking functions (advanced bridging/routing, NAT/firewall, VPN, web server and CableHome applications) from DOCSIS cable modem functionality. ***This is accomplished by localizing data networking functions in the data networking engine processor and localizing cable modem functions in the cable modem engine processor.***

'775 Patent at 4:13-19 (emphasis added). "Localizing" the functions in different processors is repeated throughout the specification. *See* '775 Patent at 1:66-2:4, 2:13-15, 2:24-27, 4:13-20, 4:25-28. It is not, however, captured in Entropic's proposed construction, which risks undermining that central limitation.

Like the previous *Markman* order, the rest of Entropic's argument is directed to countering a position Defendants do not assert because other claim limitations already expressly foreclose it. Defendants agree with Entropic's assertion that the two engines may communicate with each other over a data path that connects them. Pl. Br. at 10-11. Not only is that depicted in Figure 1, as Entropic notes, but it is expressly incorporated in the claim limitations that ***require*** that there be a data bus connecting the two engines and that the cable modem engine forwards packets to the data networking engine. Entropic's proposed construction is not necessary to establish these points because they are already in the claim.[2]

The prosecution history is in accord and confirms that the insertion of Entropic's construction directed to a nonexistent dispute would undermine key limitations of the claim. During prosecution, the applicant distinguished the Brooks prior art reference because, in that reference: (1) "the CMAC/CPHY block (114,

[2] The problem arises when Entropic seeks to extend its construction further to suggest that claimed "'partitioning' need not involve physical separation that blocks off the claimed 'engines' from each other." Pl. Br. at 10. If Entropic means that the two engines can forward data to each other, that is true but established elsewhere. If Entropic means that the engines can be implemented on the same circuit or processor, then that contradicts limitations elsewhere in the claim.

118, 224 and 228) communicates with both the processors 102 and 104 by sharing the same data paths and sharing the same direct memory access controller," and (2) "accepting the Examiner's assertion that first processor 102 handles data networking functionality, . . . processor 102 is [also] programmed to implement the desired MAC functionality (which would include typical DOCSIS MAC functionality)." Bi Decl., Ex. 1 at ENTROPIC_COMCAST_021220-221. Thus, as the Eastern District of Texas noted, "the patentee distinguished Brooks as lacking functional separation because what the examiner identified as the cable modem engine in Brooks required interaction with the 'CMAC unit,' and, the patentee argued, ***such interaction involved circuitry that was shared with what the examiner identified as the data networking engine in Brooks.***" *Entropic Commc'ns*, 2023 WL 4181266, at *9 (emphasis added). Adopting a construction that suggests the two engines need not "necessarily" be physically separate risks eliminating a central distinguishing feature of the alleged invention—that the two engines cannot share circuitry—for no reason. Defendants do not contend that the cable modem engine and the data networking engine cannot share any ***connecting*** circuitry, which is the dispute the Eastern District of Texas addressed. *Id*., at *10. But, under the plain language of the claim and the prosecution history, the two engines cannot themselves share circuitry, a point that Entropic's unnecessary construction calls into question.

The claims speak clearly for themselves in language that a jury will easily understand. Entropic's proposed construction adds potential confusion and risks undermining other claim limitations, all in the name of resolving a dispute about claim scope that is not presented. Entropic's construction is therefore improper and the Court should give this term its plain and ordinary meaning.

B. "content payload" ('690 Patent, claims 7 and 8)

Defendants' Proposed Construction	Plaintiff's Proposed Construction
"data to be transmitted in the probe"	Plain and ordinary meaning

The Court should adopt Defendants' construction to affirm that the "content payload" of the probe refers to the data content of the probe, as opposed to any other information that might be transmitted with the probe, such as overhead information or a prefix. The construction is consistent with the plain meaning of the phrase "***content*** payload" and is consistent with the way "payload" is used throughout the '690 Patent's specification. The Court should reject Entropic's attempts to obscure this distinction through an undefined "plain and ordinary" meaning.

Claim 1 of the '690 Patent (from which asserted claims 7 and 8 depend) recites a method for sending "probe[s]" among nodes (i.e., devices) in a network. The specification explains that such probes may be used to assess the condition of the network between nodes. '690 Patent at 1:48-57; *see also id*. at 4:25-38. A first node generates such a "probe" in response to a "probe request" from the receiving node. '690 Patent, claim 1; *see also id*. at 1:66-2:3. The "probe request" specifies "parameters" for the probe, including at least the "content payload of the probe." *Id*., claim 1. Because the receiving node defined the probe for the transmitting node, "comparing the reference probe with the actual received probe" allows the receiving node to "determine some of the characteristics of the channel between the transmitting and receiving node." *Id.* at 1:48-57; *see also id*. at 2:6-19.

The specification and claims use "content payload" to refer to the probe parameter that defines the data content of a probe. The specification repeatedly and consistently uses the term "payload" to refer to the probe's data content. *See, e.g.*, '690 Patent at 2:6-9, 3:58-59 (payload is "data content"); 7:63-66 (payload has a "raw data sequence"), 5:23-29 (same), 8:7-12. This "content payload" is distinct from other information, such as a "prefix" or "preamble," that could also be included with a probe. For example, the specification describes embodiments in which a probe includes a "preamble" that can be used to "receiv[e] and decod[e]" the payload. *Id*. at 8:20-25. Throughout the specification, the prefix or preamble is

distinct from the payload itself. *See id*. at 3:40-47 (explaining that, in embodiments in which probe is a data packet, the packets "comprise preambles and payloads"); 2:11-17 (distinguishing between "number of symbols for the payload of the probe" and "cyclic-prefix length for the payload of the probe"); 9:7-13.

Defendants' construction does not, as Entropic suggests, limit "probe" to a "packet" or exclude "symbols" from a probe's content payload. Pl. Br. at 14. First, the construction says nothing about a packet; it refers only to "data" that is transmitted in a "probe."[3] The term "data" does not imply that the probe must be a packet, as the specification uses the term "data" to refer generally to what is sent over the network. '690 Patent at 1:41-46. A probe is among the data sent over the network, so its payload ***definitionally*** comprises data. *See, e.g., id*. at 3:58-59 (in packet-based embodiment, the packet "payload is used to transmit the ***data*** content of the packet") (emphasis added), 5:23-29 (describing probe request that specifies a "raw data sequence" for the probe), 7:63-66 ("the probe request specifies a raw data sequence for the probe (***or for just the probe's payload***)") (emphasis added), 8:7-12. Second, in the patent "symbols" are data. For example, the specification explains that probe parameters can include the "number of symbols for the probe payload length" and "the raw data sequence" for the payload. *Id*. at 8:7-12; *see also id*. at 2:6-17 (stating that probe parameters may include the "payload content of the probe" and "the number of symbols for the payload of the probe"). Accordingly, the data to be transmitted in the probe may include symbols, and Defendants' construction does not suggest otherwise.

Defendants' construction is consistent with technical-dictionary definitions of "payload" as of the filing date of the '690 Patent. *See Phillips*, 415 F.3d at 1317. For example, the 2000 edition of Newton's Telecom Dictionary, which offers

[3] To the extent Entropic asserts that it is improper to consider the specification's teachings about the payload of packets to inform the meaning of the content payload of a probe, Pl. Br. at 13-14, Entropic is wrong. A probe ***may*** be a packet, so any interpretation of the payload of a probe must be consistent with the specification's teachings concerning the payload of a packet.

definitions of terms in telecommunications networking and the internet, defined "payload" as: "of a data field, block or stream being processed or transported, the part that represents information useful to the user, ***as opposed to system overhead information***." Bi Decl., Ex. 2 at COMCAST_ENTROPIC00039164 (emphasis added). That definition is not only consistent with Defendants' description of "payload" as "data," but highlights the distinction between "content" and "overhead" that Defendants seek to make through claim construction. Other contemporaneous dictionaries offer similar definitions and make the same distinction. *See, e.g.*, *id*., Ex. 3 at COMCAST_ENTROPIC00039198 (defining "payload" as "[t]he data . . . that is to be transferred from the source node to the destination node," having "a specific format, defined in the transaction layer"; or "[t]he portion of a primary packet that contains data . . .").

Entropic makes the need for a construction clear in the last paragraph of its argument on this term, where it references a potential Defendant argument that "'data' is narrower than any reference signal." Pl. Br. at 14. Defendants do not argue here that the term "data" (which is not being construed) is narrower than any reference signal. However, the term "content payload" certainly is narrower than any type of "data" or "any reference signal." It is the data (including symbols) to be transmitted by the probe, as opposed to prefix, preamble, or overhead information of that probe. The Court should therefore adopt Defendant's proposed construction.

C. "cable modem termination system (CMTS)" ('682 Patent, claims 1, 3-5, 9)

Defendants' Proposed Construction	Plaintiff's Proposed Construction
"equipment at which the cable modem's connection to the hybrid-fiber coaxial network terminates"	Plain and ordinary meaning, wherein the CMTS may be realized in hardware, software, or a combination of hardware and software, and may be realized in a centralized or distributed fashion

Defendants' proposed construction reflects the plain and ordinary meaning of CMTS to one of skill in the art at the time of the invention and is consistent with all the intrinsic and extrinsic evidence. In contrast, Entropic's proposal fails to explain what a CMTS is and instead seeks to expand the claims well beyond what their language, the specification, and the prosecution history support.

As an initial matter, CMTS is not a term that any juror will know, so a construction that defines the term for the jury is necessary. *O2 Micro*, 521 F.3d at 1362-63 (claim construction is appropriate to clarify claims for the jury). Entropic's proposed definition fails this basic function. It simply uses the term in its own definition and proposes that "the CMTS may be realized in hardware, software, or a combination of hardware and software, and may be realized in a centralized or distributed fashion." None of the additional language is in the claim and it cannot be supported. But, more fundamentally, Entropic's construction fails to say what a CMTS even is. In contrast, Defendants' construction will inform the jury about the meaning the patent gives to this technical term.

First, the '682 Patent teaches that a CMTS comprises hardware.[4] The '682 Patent explains that the CMTS is "circuitry operable to manage connections to CMs [cable modems]." '682 Patent at 2:61-62. "Circuitry," in turn, refers to "physical electronic components, (i.e., hardware) and any software and/or firmware ('code') which may configure the hardware, be executed by the hardware, and or otherwise be associated with the hardware." *Id.* at 2:32-36. A person of skill in the art would thus understand that the claimed CMTS must be hardware, which in turn may run or be configured by computer code that allows it to manage the connections to cable modems. *Phillips*, 415 F.3d at 1316 (when a patentee defines a claim term, their definition governs).

[4] Defendants do not dispute that firmware or software may configure the CMTS hardware or that the CMTS may execute code. *See* '682 Patent at 2:32-37.

Second, the patent establishes that the CMTS is located at the termination point for the claimed modems' connection through the HFC network. The patent notes that the claimed systems and methods are "substantially as shown in and/or described in connection with at least one of the figures." '682 Patent at 1:66-2:2. Each of those figures depicts the CMTS as located at the termination point of the cable modems' connection through the HFC. *See id*. at Figs. 1, 2A, 4A, 4B. For example, Figure 1 diagrams an exemplary cable network including a CMTS (102) and cable modems (112_1-112_5). *Id.* at 2:56-60. The patent refers to the components between the CMTS and cable modems as the "hybrid fiber coaxial (HFC) network." *Id*. at 3:46-50. The CMTS is thus the termination point for the modems' connection through the HFC network:

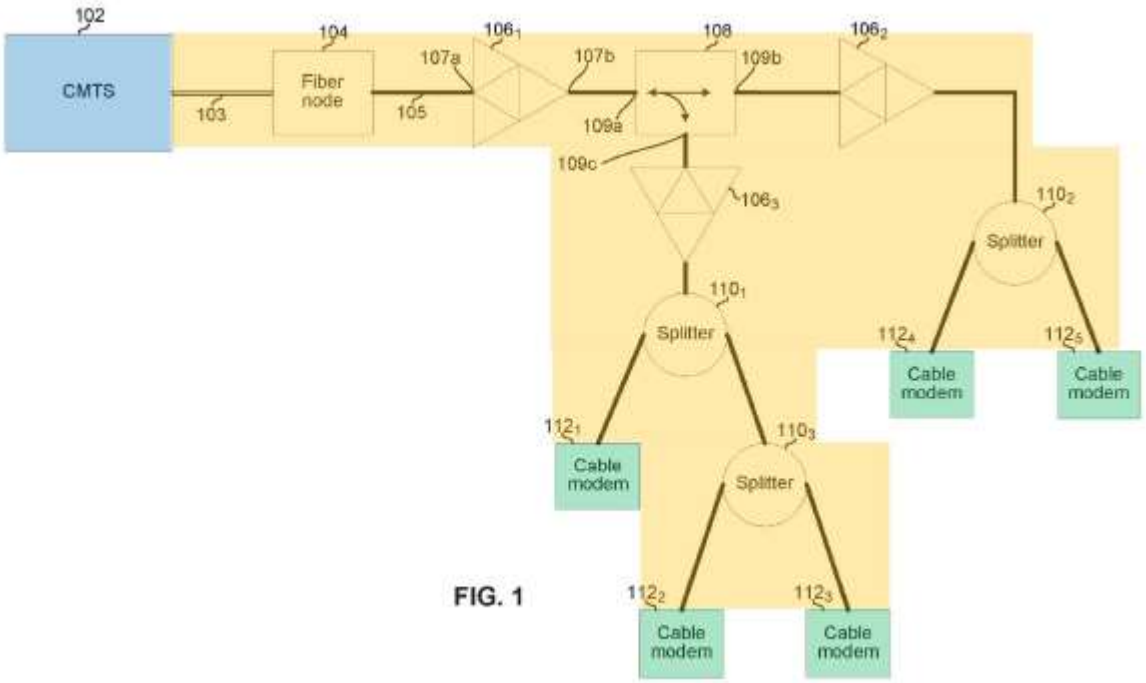

FIG. 1

See id. at Fig. 1 (portraying the CMTS (highlighted blue) and cable modems (highlighted green) connected through the HFC network (highlighted yellow)); *see also* Fig. 2A (depicting the cable modem connected to the CMTS through the HFC network as a simplified, block diagram), Figs. 4A-4B; *id*. at 3:47-52 (HFC is

located "***between*** the CMTS and CMs"—such that the CMTS is the end point of the modems' connection through the network) (emphasis added).

Entropic's contention that a CMTS may "be realized in software . . . and may be realized in a . . . distributed fashion" is inconsistent with these teachings. The '682 Patent's definition of a CMTS as "circuitry" (and its definition of "circuitry") permits a CMTS to be hardware, or hardware running software, but not software alone. *Id.* at 2:32-36. Further, the claims and specification teach that a CMTS must be in a single place—a requirement inconsistent with a CMTS that is either software-only or distributed. For example, the specification teaches that the location of a cable modem in the claimed system can be defined by the "total distance of fiber and/or coaxial cable between the CMTS [] and the CM." *Id.* at 6:12-20. Likewise, claim 7, which depends from asserted claim 1, recites "assigning said cable modems among said service groups based on respective distances between said CMTS and said cable modems." *Id.*, claim 7. If there is a "distance" between the claimed CMTS and each claimed cable modem, it follows that the cable modem must have a specific spatial position. Neither software alone nor a "distributed system" has a specific spatial position.[5]

Entropic reaches its faulty construction because it relies upon disclosures that describe "the invention" ***as a whole***, not the claimed CMTS. *See* Pl. Br. at 16, *citing* '682 Patent at 7:31-36. The claimed inventions include systems and methods that involve not only a CMTS, but also service groups of cable modems that may be located at various distances from one another across an HFC network. *See, e.g.*, '682 Patent, claim 1, 7, and 8. Just because the invention as a whole, including a CMTS and multiple modems, may be distributed does not mean each of those components can be.

[5] Entropic urges the Court to ignore this "inference" from a single dependent claim, Pl. Br. at 18, but the law is clear that the Court "must not interpret an independent claim in a way that is inconsistent with a claim which depends from it." *Wright Med. Tech., Inc. v. Osteonics Corp.*, 122 F.3d 1440, 1445 (Fed. Cir. 1997).

In addition to the reasons outlined above, these general disclosures about "the invention" ***cannot*** describe the CMTS specifically because they are inconsistent with the way the patentee described a CMTS during prosecution. *MasterMine Software, Inc. v. Microsoft Corp.*, 874 F.3d 1307, 1311–12 (Fed. Cir. 2017) (inventor's explanation of the claims during patent examination indicates the "scope of the actual invention that is disclosed, described, and patented") (internal quotation marks omitted). To overcome an examiner's rejection of the pending claims of U.S. Patent No. 9,419,858, a parent of the '682 Patent,[6] the patentee asserted that a CMTS is a "particular machine." Bi Decl., Ex. 4 at ENTROPIC_COMCAST_018798. It argued that:

> Contrary to the Office's findings, ***a CMTS is certainly not a "generic computer." It is a specific set of hardware and software*** configured for a very specific purpose of managing and communicating with cable modems of a hybrid fiber coaxial (HFC) network.

Id. (emphasis added). By contrast, the disclosures Entropic now cites in support of its construction describe how "the invention" may be realized in "***[a]ny*** kind of computing system or other apparatus adapted for carrying out" the invention, including "***a general-purpose computing system*** with a program or other code." '682 Patent at 7:33-42. Because they are inconsistent with the patentee's statements during prosecution these general disclosures cannot be evidence of how "CMTS" should be construed.

Moreover, the portion of the specification Entropic relies upon for its construction, *see* '682 Patent at 7:33-36, appears to be boilerplate language with no connection to the invention of the '682 Patent ***at all***. It appears in dozens of patents and patent applications prosecuted by the law firm listed on the face of the '682 Patent. *See* Padmanabhan Decl., Ex. 1. The inventions of those patents and

[6] *See Hakim v. Cannon Avent Grp., PLC*, 479 F.3d 1313, 1318-19 (Fed. Cir. 2007) (prosecution history of any parent application is intrinsic evidence in the claim construction of the child application).

applications span subject matter including gift registries, consumer games, navigation systems, and ultrasound technology. *Id*. The Federal Circuit has repeatedly declined to rely on such boilerplate in claim construction. *See Wireless Agents LLC v. Sony Ericsson Mobile Commc'ns AB*, 189 F. App'x 965, 967 (Fed. Cir. 2006) (holding that boilerplate assertions that the invention should capture "alternative embodiments" and "modifications" did not broaden claim-term beyond meaning derived from specific disclosures in the specification); *Cultor Corp. v. A.E. Staley Mfg. Co.*, 224 F.3d 1328, 1331 (Fed. Cir. 2000) (limiting claims to specific disclosures despite boilerplate stating the "invention" is not limited to them).

Although the intrinsic record fully supports Defendants' proposed construction, extrinsic evidence as of the January 2012 provisional-application date of the '682 Patent confirms it is correct. For example, the 2011 edition of Newton's Telecom Dictionary defines CMTS as "[a] piece of hardware located in a cable operator's local network (generally in the 'headend') that acts as the gateway to the Internet for cable modems in a particular geographic area." Bi Decl., Ex. 6 (Chatterjee Decl.) ¶ 58, Ex. 11 (Chatterjee Decl., Ex. S) at COMCAST_ENTROPIC00043295. The cable-industry standard DOCSIS—which is the set of specifications for the cable network referenced in embodiments of the '682 Patent, '682 Patent at 2:57-58—similarly defines CMTS as "located at the cable television system head-end or distribution hub, which provides complementary functionality to the cable modems to enable data connectivity to a wide-area network." Bi Decl., Ex. 6 (Chatterjee Decl.) ¶¶ 52-55, 62, Exs. 7 (Chatterjee Decl., Ex. O) at DEF_ENTROPIC_PRIOR ART 00010216, 00010225, 8 (Chatterjee Decl., Ex. P) at DEF_ENTROPIC_PRIOR ART 00005511, 9 (Chatterjee Decl., Ex. Q) at DEF_ENTROPIC_PRIOR ART 00067623, 00067639, 10 (Chatterjee Decl., Ex. R) at COMCAST_ENTROPIC00039114-115. Product specifications and articles describing CMTSs available prior to July 2012 also

show that those CMTSs were hardware that terminated a cable modem's connection to the HFC network. Bi Decl., Ex. 6 (Chatterjee Decl.) ¶¶ 64-66, Exs. 12 (Chatterjee Decl., Ex. U) at COMCAST_ENTROPIC00043399-400, 13 (Chatterjee Decl., Ex. V) at COMCAST_ENTROPIC00043279-280, 14 (Chatterjee Decl., Ex. W) at COMCAST_ENTROPIC00042965-966, 15 (Chatterjee Decl., Ex. X) at COMCAST_ENTROPIC00042990-991, 16 (Chatterjee Decl., Ex. Y) at COMCAST_ENTROPIC00043135; Dkt. 325-6 (Holobinko Dep. Tr.) at 58:7-15, 58:20-59:6 (Entropic's expert confirming referenced products are CMTSs). Dr. Sandeep Chatterjee, a networking expert who offered a declaration and deposition testimony in this case, confirms that all this evidence shows a person of skill in the art in July 2012 would have understood that a CMTS is equipment at which the cable modem's connection to the HFC network terminates. Bi Decl., Ex. 6 (Chatterjee Decl.) ¶¶ 46-76.

Entropic offers no competent extrinsic evidence contrary to Dr. Chatterjee's opinions. Entropic's expert, Mr. Holobinko, submitted a declaration opining that a person of skill in the art would understand a CMTS could be a distributed system comprising a wide range of different hardware and/or software, but did not offer any corroborating documents (or even identify any purported distributed system by name). Dkt. 325-10 (Holobinko Apr. 19, 2024 Decl.) ¶¶ 39-40. Such uncorroborated expert testimony is not reliable evidence of the state of the art. *Phillips.*, 415 F.3d at 1318; *Nike, Inc. v. PUMA N. Am., Inc.*, 2019 WL 5457917, at *3 (D. Mass. Oct. 24, 2019). The Court should therefore give no weight to Mr. Holobinko's opinions.

Finally, Entropic's assertion that the Eastern District of Texas rejected Defendants' construction in the Charter Case is incorrect. The court there did not construe CMTS. Charter then sought summary judgment that an accused product did not have a CMTS since it did not meet the definition of CMTS set forth in the DOCSIS specification. *Entropic Commc'ns LLC v. Charter Commc'ns, Inc.*, No.

2:22-cv-00125-JRG, Dkt. No. 354 at 4 (E.D. Tex. Nov. 28, 2023). The magistrate judge concluded that DOCSIS did not necessarily define the claimed CMTS and that there was a fact dispute as to whether a particular component met the term's plain and ordinary meaning. *Id.* That decision in no way forecloses Defendants' construction here. While the DOCSIS definition (set forth above) is consistent with Defendants' construction, it is not the same as Defendants' construction.

Because only Defendants' proposed construction defines CMTS and is consistent with the intrinsic and extrinsic evidence, the Court should adopt it.

D. "SNR-related metric" ('682 Patent, claims 1, 9)

Defendants' Proposed Construction	Plaintiff's Proposed Construction
Indefinite	Plain and ordinary meaning

The Court should hold that "SNR-related metric" is indefinite. While signal-to-noise ratio, or "SNR," is a well-known term, "SNR-related metric" is not. The '682 Patent provides no guidance about what it means for a metric to be "related" to SNR, and no person of skill in the art (including the two sides' experts) could define its scope with reasonable certainty. *See Nautilus*, 572 U.S. at 901. Because the '682 Patent's "claims, when read in light of the specification and the prosecution history" do not "provide objective boundaries for those of skill in the art," they are indefinite. *See Dow Chem. Co. v. Nova Chemicals Corp. (Canada)*, 803 F.3d 620, 630 (Fed. Cir. 2015).

Indefiniteness is "inextricably intertwined with claim construction," *Cox Commc'ns, Inc. v. Sprint Commc'n Co. LP*, 838 F.3d 1224, 1232 (Fed. Cir. 2016) (internal quotation omitted) and "general principles of claim construction apply," *Eli Lilly & Co. v. Teva Parenteral Meds., Inc.*, 845 F.3d 1357, 1370 (Fed. Cir. 2017). A court must therefore "look first to the language of the claim to determine whether the meaning of [a disputed term] is reasonably clear." *IBSA Institut Biochimique, S.A. v. Teva Pharms. USA, Inc.*, 966 F.3d 1374, 1378 (Fed. Cir. 2020) (quoting *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1363 (Fed. Cir. 2018)).

Here, the claim language does not set boundaries for the scope of "SNR-related metric." Instead, it simply recites the term with no defining principle or description. For example, claim 1 references one or more cable modems with "corresponding signal-to-noise ratio (SNR) related metric[s]" that are used to assign "each cable modem among a plurality of service groups." '682 Patent at 8:7-9. "Composite" SNR-related metrics can then be used for "communicating with" a service group. *Id*. at 8:16-19. None of these disclosures explicitly or implicitly defines the scope of "SNR-related metric."

The '682 specification does not clarify the meaning of the term. The specification references "SNR-related metric" only once, describing it as an example of a "measured performance metric." '682 Patent at 3:54-63. The specification then lists four examples, but makes clear that there are other, unlisted SNR-related metrics:

> As shown in FIG. 2A, to determine one or more measured performance metric(s) (e.g., an SNR-related metric such as ***[1]*** SNR at a particular frequency or ***[2]*** SNR over a range of frequencies (an SNR profile), ***[3]*** noise levels, ***[4]*** strength of desired signals, ***and/or the like***) . . .

Id. (emphasis, annotation added). The '682 specification incorporates by reference U.S. Patent Application No. 13/948,401, which recites the same list of example SNR-related metrics and adds two more: bit error rate and symbol error rate. *See* U.S. Patent Pub. No. 2014/0022926 ¶ 24 (issuing from Application No. 13/948,401 (the "'401 Application")). Bi Decl., Ex. 5. Like the '682 Patent, the '401 Application makes clear that there are SNR-related metrics other than those it lists:

> A measured performance metric may be, for example, an SNR-related metric such as noise levels, strength of received desired signals, SNR at a particular frequency, SNR over a range of frequencies (an SNR profile), ***[5]*** bit error rate, ***[6]*** symbol error rate, ***and/or the like***.

Id. (emphasis, annotation added).

These disclosures teach a person of skill in the art that not all measured performance metrics are SNR-related metrics. Such a person would also know that the six listed metrics are examples of SNR-related metrics. However, the specification offers no explanation or principle for determining what makes any other metric sufficiently "like" the listed metrics to make it "SNR-related" or (conversely) sufficiently unlike the listed metrics to make it a different type of measured performance metric. A person of skill in the art thus has no way of knowing what additional metrics count as SNR-related.

Extrinsic evidence does not help to clarify the term. "SNR-related metric" was not a term of art as of the July 2012 priority date of the '682 Patent. Dr. Sandeep Chatterjee, an expert in the field of networking, could not find any dictionary or technical treatise that defined it. Bi Decl., Ex. 6 (Chatterjee Decl.) ¶¶ 79, 80. Entropic's expert, Dr. Holobinko, identified only three documents—a patent application, a patent, and a journal article—that used the term prior to July 2012. Dkt. 325-10 (Holobinko Apr. 19, 2024 Decl.) ¶ 48. None of those documents defines "SNR-related metric." One uses the term without elaboration. *Id*., Dkt. 325-15 (Ex. E) at 3:29, 5:28-31. The others use the term to describe the measurements power and effective SNR, respectively. *Id*. Dkt. 325-14 (Ex. D) ¶ 0027, Dkt. 325-16 (Ex. F) at 152. Those three uses provide no insight into how a person of skill in the art would have understood "SNR-related metric" in 2012, let alone show it was a term of art with an established meaning. *IBSA Institut Biochimique*, 966 F.3d at 1381 (finding term was not "a recognizable term of art" when it appeared in four patents, but no scientific dictionaries or literature, as of the invention date).

When a claim term "has no ordinary and customary meaning" in the art, it is a "coined term," and its definiteness turns on "whether the intrinsic evidence provides objective boundaries." *Iridescent Networks, Inc. v. AT&T Mobility, LLC*, 933 F.3d 1345, 1353 (Fed. Cir. 2019) (citing *Interval Licensing LLC v. AOL, Inc.*,

766 F.3d 1364, 1371 (Fed. Cir. 2014)). The evidence provided by both sides' experts confirms that the '682 Patent fails this test. Bi Decl., Ex. 6 (Chatterjee Decl.) ¶ 83. As Dr. Chatterjee explained, the exemplary SNR-related metrics listed or incorporated into the '682 specification do not have a single, similar relationship to SNR. *Id*. ¶¶ 82, 84. For example, noise levels and signal strength are the measurements used to ***compute*** SNR ("signal-to-noise ratio"). *Id*. ¶ 82; Dkt. 325-19 (Holobinko Apr. 29, 2024 Decl.) ¶¶ 7, 9. SNR at a particular frequency and SNR profiles ***incorporate*** SNR. *Id*. Bit error rate and symbol error rate ***may*** vary with SNR, but may also have nothing to do with SNR, depending on the circumstances. Bi Decl., Ex. 6 (Chatterjee Decl.) ¶¶ 84, 86; Dkt. 325-9 (Chatterjee Dep. Tr.) at 69:21-70:1, 84:25-86:11.[7] These examples therefore offer no guidance—let alone reasonable certainty—about how to determine whether any other metric is SNR-related. Bi Decl., Ex. 6 (Chatterjee Decl.) ¶¶ 86-91. Accordingly, the term is indefinite. *Icon Health & Fitness, Inc. v. Polar Electro Oy*, 656 F. App'x 1008, 1014-15 (Fed. Cir. 2016) (holding claim-term "relationship" indefinite because intrinsic record did not specify the nature of the relationship).

The declaration and testimony of Entropic's expert, Mr. Holobinko, confirm that a person of skill in the art cannot give a reasonably certain meaning to "SNR-related metric." In his two declarations and deposition testimony, Mr. Holobinko offered at least five different definitions of "SNR-related metric," including:

(1) metrics "***representing*** and/or ***measuring*** signal ***quality***" (Dkt. 325-10 (Holobinko Apr. 19, 2024 Decl.) ¶ 48 (emphasis added); Dkt. 325-6 (Holobinko Dep. Tr.) at 18:23-19:12),

[7] Entropic's attempt to address this issue only serves to reinforce the term's indefiniteness. Pl. Br. at 22-23. In response to Dr. Chatterjee's observation that certain metrics "may, in theory, impact SNR or be impacted by SNR," Entropic claims that "what matters is whether the metric, in reality, measures the signal quality or carrying capacity, as SNR itself does." *Id.* But, as explained below, Entropic's own expert cannot apply this purported test consistently and runs into the same problems attempting to apply the term to latency and throughput that Dr. Chatterjee does.

(2) "measurements ***relating to*** signal ***quality***" (Dkt. 325-10 (Holobinko Apr. 19, 2024 Decl.) ¶ 49) (emphasis added),

(3) metrics that "***measure*** the same fundamental communications property as SNR—the information carrying ***capacity*** (i.e., the 'quality' or 'performance' of a channel)" (Dkt. 325-19 (Holobinko Apr. 29, 2024 Decl.) ¶ 11) (emphasis added),

(4) metrics that "provide a ***measure*** of signal ***quality*** which in turn ***indicates*** the information carrying ***capacity*** of the signaling channel" (*id*. ¶ 17) (emphasis added), and

(5) metrics that are a "***substitute for SNR***" (Dkt. 325-6 (Holobinko Dep. Tr.) at 25:21-25) (emphasis added).

Mr. Holobinko's numerous, shifting definitions do not provide objective criteria for determining what is an SNR-related metric. To say a metric "relat[es] to signal quality" is no more precise or objective than to describe it as "SNR-related." Likewise, it is unclear what it means to say a metric "represents" quality or "indicates" capacity. Mr. Holobinko does not cite a single document to show, or offer any explanation as to why, a person of skill in the art would understand any of these definitions. For that reason alone, his opinion is entitled to no weight. *Phillips*, 415 F.3d at 1318 ("[C]onclusory, unsupported assertions by experts as to the definition of a claim term are not useful to a court."); *see Aristocrat Techs. Australia Pty Ltd. v. Int'l Game Tech.*, 709 F.3d 1348, 1360 (Fed. Cir. 2013).

Mr. Holobinko's inability to apply his various definitions of "SNR-related metric" in a consistent way underscores the indefiniteness of the term. *Bombardier Recreational Prod. Inc. v. Arctic Cat Inc.*, 785 F. App'x 858, 867 (Fed. Cir. 2019) (Even "if a claim term's definition can be reduced to words, the claim is still indefinite if a person of ordinary skill in the art cannot translate the definition into meaningfully precise claim scope.") (internal citation omitted); *see also IQASR LLC v. Wendt Corp.*, 825 F. App'x 900, 907 (Fed. Cir. 2020).

The analysis of the metrics latency and throughput that Mr. Holobinko offers in his declaration is illustrative. In analyzing whether latency is an SNR-related metric, Mr. Holobinko admits that latency ***may be*** (depending on the circumstances) a "metric for the information carrying capacity of a physical channel." Dkt. 325-19 (Holobinko Apr. 29, 2024 Decl.) ¶¶ 20-21. Latency thus meets one of his definitions of "SNR-related metric" in certain (undefined) circumstances. *See id.* ¶ 11 (arguing SNR-related metric is measure of capacity). Mr. Holobinko nevertheless concludes, without explanation, that latency is ***not*** an SNR-related metric. *Id*. ¶ 22.

Then, he reaches the opposite conclusion in his analysis of throughput—despite apparently identical considerations. *Id*. ¶ 23. Mr. Holobinko opines that, as with latency, throughput ***may be*** (depending on the circumstances, such as the amount of noise in the channel) an indicator of signal quality. *Id*. ¶ 23. Unlike with latency, however, he concludes that throughput ***could*** be an SNR-related metric if it "provides a measure of signal quality," but would not be an SNR-related metric "where [it] does not[.]" *Id*. ¶¶ 24-25.

In short, Mr. Holobinko offers no principle, guideline, or other explanation for why certain metrics that ***sometimes*** indicate signal quality or capacity are ***not*** SNR-related (regardless of the circumstances), whereas others ***may be*** SNR-related (depending on the circumstances). Absent a principle for making that determination, a person of skill in the art would be at a loss to determine whether a given metric that at least sometimes represents, measures, relates to, or indicates signal quality or capacity is or is not "SNR-related" within the scope of the claims.[8]

[8] The fact that, under Mr. Holobinko's interpretation, the same metric can be SNR-related in certain circumstances adds an additional layer of confusion. That is, it raises the question of whether "SNR-related metric" refers to a fixed set of metrics or is an empirical question that must be answered for each allegedly infringing system. *See, e.g.*, *Nevro Corp. v. Boston Scientific Corporation*, 955 F.3d 35 (Fed. Cir. 2020); *Advanced Aerospace Techs., Inc. v. United States*, 124 Fed. Cl. 282, 308–09 (2015) (citing *Halliburton Energy Servs., Inc. v. M-I LLC*, 514 F.3d 1244, 1255 (Fed. Cir. 2008)).

The internal inconsistency of Mr. Holobinko's definitions is even more apparent in his deposition testimony, which shows his various definitions of "SNR-related metric" do not encompass all the SNR-related metrics disclosed in the '682 Patent. For example, Mr. Holobinko confirmed during his deposition that a person of ordinary skill would understand an SNR-related metric is a measure of capacity. *See* Dkt. 325-19 (Holobinko Apr. 29, 2024 Decl.) ¶ 11; Dkt. 325-6 (Holobinko Dep. Tr.) at 33:4-18. But he went on to testify that bit error rate—one of the SNR-related metrics disclosed in the '682 Patent—is "***not*** a measure of capacity." *Id*. at 45:13-19 (emphasis added). His definition therefore does not encompass that exemplary metric.

Similarly, Mr. Holobinko testified that a person of skill would understand that an SNR-related metric must be a "substitute" for SNR. *Id*. at 25:21-25. When asked whether the strength of the desired signal—another of the SNR-related metrics identified in the '682 Patent—is a substitute for SNR, he testified that it is not. *Id*. at 31:9-13. Thus, signal strength ***alone*** is not a substitute for SNR and so is not, under Mr. Holobinko's definition, an SNR-related metric even though it is listed in the patent as an example of one.

At bottom, Mr. Holobinko utterly fails to provide a "meaningful description of what constitutes" an SNR-related metric that would enable a person of skill in the art to "know[] when it is present" in an accused product. *IQASR LLC*, 825 F. App'x at 905–06 (internal quotations omitted). His inability to provide such a reasonably certain definition is further evidence that SNR-related metric is indefinite. *Id*. (finding claims indefinite when expert's description of the claim scope amounted to a "word salad of inconsistent indirect definitions and examples"); *IBSA Institut Biochimique.*, 966 F.3d at 1381 (finding claim term indefinite when expert could not consistently apply the term to determine what fell within the scope of the claims).

Entropic's remaining arguments do not refute the clear and convincing evidence that "SNR-related metric" is indefinite. Entropic argues that a person of skill in the art would derive meaning from the patent's description of "measuring" SNR-related metrics and using them to select communication parameters. Pl. Br. at 20-21. But it is not "sufficient that a court can ascribe ***some*** meaning to a patent's claims." *Nautilus*, 572 U.S. at 911 (emphasis added). And, in any case, the patent's description of measurement only adds to the confusion because the patent establishes that not every measured performance metric is an SNR-related metric. '682 Patent at 3:53-59 (identifying SNR-related metric as one example of measured performance metrics). Even assuming *arguendo* that SNR-related metrics ***are*** "measurements" that can be used to select communication parameters, that does not make the claims definite, because the specification offers no guidance as to ***which*** measurements count as the SNR-related metrics suitable for selecting parameters in the asserted claims.

Finally, Entropic is wrong to suggest Defendants (or Dr. Chatterjee) take a position inconsistent with that advanced in Defendant Comcast's *inter partes review* (IPR) petition. In IPR proceedings, a party may only seek to cancel patent claims on the grounds of anticipation and obviousness. 35 U.S.C. § 311(b). Challenges based on indefiniteness are not permitted. As a result, "it is neither uncommon nor impermissible for a party to advance different arguments before a District Court and the PTAB." *Molo Design, Ltd. v. Chanel, Inc.*, 2022 WL 2135628, at *4 n.1 (S.D.N.Y. May 2, 2022) (quotation marks omitted). The metric Comcast's expert identified as "SNR-related" in the IPR (modulation error rate, or "MER") is the same metric that Entropic identified as infringing in its Second Amended Complaint—not a metric Comcast identified based on the purported teachings of the '682 Patent specification. Dkt. 140-12 at 4; Dkt. 325-18 (Holobinko Apr. 19, 2024, Decl. Ex. H) at 37-38. There is thus no inconsistency between Comcast's position in the IPR and the argument Defendants advance here.

Because the '682 Patent fails to provide reasonable certainty about the scope of "SNR-related metric," the Court should find the asserted claims indefinite.

V. REQUEST FOR ENTRY OF COMPLAINT

Finally, Comcast respectfully notes that the Court must enter a complaint in its case (Case No. 2:23-cv-01050) before addressing claim construction. On November 20, 2023, the Court dismissed Entropic's First Amended Complaint with leave to amend. Case No. 2:23-cv-01049, Dkt. 120. Entropic later filed a Second Amended Complaint, a Corrected Second Amended Complaint, and a motion for leave to file a Third Amended Complaint (with new allegations). *Id*., Dkt. 130-1, 140, 143. On December 29, 2023, Comcast moved to dismiss the TAC, *id*., Dkt. 175, but the Court denied Comcast's motion as premature because Entropic had not been given leave to file it. *Id*., Dkt. 244. The Court referred Entropic's motions to supplement and amend to the Special Master, who recommended that the Court grant them. *Id*. at 2, Dkt. 277-1. The parties are still awaiting entry of the TAC and, as a result, the Court must enable entry of an operative complaint in advance of construing any claim term. *See Superior Indus., Inc. v. Masaba, Inc.*, 553 F. App'x 986, 989 (Fed. Cir. 2014) (construing terms that may not "actually affect" the infringement analysis may constitute an impermissible advisory opinion).

VI. CONCLUSION

For the foregoing reasons, Defendants respectfully request that the Court adopt their proposed constructions.

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Respectfully submitted,

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LOCAL RULE 5-4.3.4 ATTESTATION

I, Kathryn Bi, hereby attest that all other signatories listed, and on whose behalf the filing is submitted, concur in the filing's content, and have authorized the filing.

/s/ Kathryn Bi

Kathryn Bi (SBN 308652)